

numerous spots and bands of black as in *T. sybaris* Hopffer, the black zigzag bands on the primaries being rather more heavily indicated.

Expanse 0·7 inch.

♀.—Similar to those of *T. sybaris* and *T. theophrastus* (Fabr.), but differing in the white discal patch on the primaries being much more reduced. Expanse 0·6 inch.

26. *SPINDASIS WAGGÆ*, sp. nov.

Nearest to *S. namaquus* Trimen as regards the colouring of the underside, and is at once distinguished by the absence of any blue on the upper surface.

♂.—*Primaries*. Uniform brown, suffused with bronze, two black spots, the first being at the end of the discoidal cell, the second nearer the base. A narrow black submarginal line, followed by a white fringe on the hind margin.

*Secondaries*. Similar to the primaries, but having no bronze shading. Near the posterior angle is a bright orange spot, closely followed by four nearly obsolete spots of white for about half the length of the narrow black submarginal line.

*Underside*. Ground-colour brown with pearly white spots, suffused with silver and outlined with black. These spots are distributed over both wings, and do not form any regular bars or rows of spots, with the exception of a submarginal row of white spots preceding the hind marginal border. The orange spot on the secondaries is divided by a silver dot, having near the inner margin a distinct black spot.

Expanse 1·1 inch.

♀.—Similar to the male, but is rather larger, and the bronze colour is a little deeper, and is extended to the secondaries. The orange spot is also not quite so bright.

Expanse 1·2 inch.

6. On a Collection of Insects and Arachnids made by Mr. E. N. Bennett in Socotra, with Descriptions of new Species. By F. A. DIXEY, M.A., M.D., MALCOLM BURR, F.Z.S., and the Rev. O. PICKARD-CAMBRIDGE, M.A., F.R.S., C.M.Z.S.

[Received March 29, 1898.]

(Plates XXX. & XXXI.)

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I. LEPIDOPTERA, with Remarks on Local and Seasonal Forms in the Genus *Byblia* Hübn. By F. A. DIXEY, M.A., M.D., Fellow of Wadham College, Oxford.

Mr. E. N. Bennett, a Fellow of Hertford College, Oxford, reached Socotra on December 17, 1896, in company with the

late Mr. Theodore Bent and Mrs. Bent. During their visit they traversed the island from Ghalansyah in the west to Ras Momi in the east, and thence, after a long circuit to the south-west, returned to Tamarida on the north coast. The party left the island on February 11th, 1897. Interesting personal accounts of the expedition will be found in the 'Nineteenth Century' for June 1897, by Mr. Bent; and in the volume of 'Longman's Magazine' for 1897, by Mr. Bennett. The whole of their sojourn in the island came within the period of the N.E. monsoon. Atmospheric conditions were persistently dry, especially on the plains; in the mountains there was a heavy dew every morning, which soon dried in the sun. Very little rain fell at any time, and the thermometer never sank below 60° F. Exactly 100 specimens of insects and arachnids, which are now in the Hope Museum, Oxford, were collected by Mr. Bennett.

The Rhopalocera consist of 52 specimens, belonging to 15 species, two of which appear to be new to science. Of these 15 species, 9 were also taken by Professor Bayley Balfour, F.R.S., during his visit to Socotra between February 11th and March 30th, 1880<sup>1</sup>. The only one of Professor Balfour's captures not represented in the present collection is *Charaxes balfouri* Butl.

#### DANAINÆ.

##### LIMNAS CHRYSIPPUS Linn. (Nos. 1, 2.)

Two specimens; ♂ and ♀. These are paler than the average of African examples, bearing in this respect a greater resemblance to specimens from India. The white spots forming the subapical band are in both, but especially in the male, unusually small and discrete. Some African specimens show the same character, but rarely in so pronounced a form<sup>2</sup>. The Socotran male has most of the veins in the hind wing, especially the branches of the median, thickly covered with white scales, which also extend to narrow adjacent areas of the wing, and form a ring around the black patch marking the position of the submedian scent-gland. A trace of the same white colouring of veins and adjacent areas is also visible in the female. This is a first approximation to the condition seen in var. *alcippoides*, Moore, where, however, the veins themselves often retain their brown colour in the midst of the whitened area of the hind wing. It is noticeable that both the Socotran specimens are in fine condition, though the collection as a whole has suffered much from the attacks of beetle larvæ.

"Seen only in the hills, flying strongly. Not common."—*E. N. B.*

<sup>1</sup> See Proc. Zool. Soc. 1881, pp. 175-180, pl. xviii.

<sup>2</sup> A pair from Aden in Coll. Brit. Mus. closely resemble the Socotran examples in this respect, and also in the general ground-colour. A female specimen from Aden in Coll. Hope, of the same ground-colour, also shows an approach to the discrete condition of the subapical white spots. Prof. Balfour's Socotran specimen, a female, has like Mr. Bennett's pair a pale ground-colour, but the subapical spots are less discrete. It is curious that specimens of *L. chrysippus* in Coll. Brit. Mus. from Athens, Turkey, and Syria are as dark as the ordinary form from Africa.

## ACRÆINÆ.

## ACRÆA NEOBULE Doubl. (Nos. 10-15.)

*Acraea neobule* Doubl.; Butler, Proc. Zool. Soc. 1881, p. 177, pl. xviii. fig. 5.

Six specimens; probably all females, but in one the abdomen is missing. These resemble *A. neobule* from the African mainland, but the powdering of black scales at the apex of the fore wing is much more distinct, and there is little or no admixture of brown or reddish scales with the black of the apex, as generally occurs in *A. neobule*. In all six examples the ground-colour is deeper in tone, and the dark border of the hind wing is broader and has a smoother outline than in average specimens of *A. neobule*, while the pale spots in the dark border are on the upperside either not present or comparatively indistinct. All the black spots on the hind wing are relatively larger than in normal *A. neobule*; they are also more uniform in size; the two spots which occur one on each side of the discoidal vein, usually very small in *A. neobule*, are here less different in bulk from the other dark spots of the wing. The abdomen in these specimens is black with spots of the pale ground-colour, as in *A. hortæ* Linn. A female *A. neobule*, brought from Socotra by Prof. Bayley Balfour, has a perceptible powdering of reddish scales at the apex of the fore wing, but in other respects resembles Mr. Bennett's specimens. It was noted and figured in 1881 by Mr. Butler (*loc. cit.*), who, however, refrained from giving it a specific name in the absence of further examples. From the present series it seems probable that the differences from normal *A. neobule* are fairly constant, but not sufficiently so to warrant separation. It is worth remarking that in Reiche's figure of *A. neobule* from Abyssinia<sup>1</sup> the border of the hind wing is comparatively narrow, denticulate, and furnished with large light-coloured spots, while the apex of the fore wing appears to be powdered with red. The specimen represented differs therefore considerably from Mr. Bennett's series.

"Mostly seen in the hills, at an elevation of about 2000 feet. Not hard to get, the flight being slow and bold."—*E. N. B.*

## SATYRINÆ.

## CALYSISME ANYNANA Butl. (Nos. 3-7.)

*Mycalasis anynana* Butl. Ann. Nat. Hist. (5) iii. (1879), p. 187.

*Calysisme socotrana* Butl. Proc. Zool. Soc. 1881, p. 175, pl. xviii. fig. 7.

Five specimens; 3 ♂, 2 ♀. Two of the males and one of the females are much worn. The iris of the large ocellus on the underside of the fore wing, which is whitish in the male described

<sup>1</sup> Ferr. et Gall., 'Voy. en Abyss.' iii. p. 466, pl. 33. fig. 3. See Trimen, 'South Afr. Butt.' vol. i. 1887, p. 138.

by Butler (P. Z. S. 1881, p. 175), is in two of the present males, including the best preserved of the three, distinctly orange as in the female. The size of all the smaller ocelli on the under surface seems to vary in both sexes. The upper surface of the hind wing carries in the male the glandular patch and tuft of hairs which are characteristic of the genus (Moore, Lepid. Ceylon, 1880-81, p. 20). The under surface of the dorsal border of the fore wing, where it overlaps the hind wing, is similarly clothed in the male with pale and glistening scales, forming a pearly patch. Five specimens of *C. anynana* in Coll. Brit. Mus. from the Island of Johanna (Comoro Group) are apparently "wet-season" forms; but another specimen from the same locality and one from Zanzibar seem to be "dry-season" forms and are indistinguishable from Socotran examples.

"The commonest butterfly in the island, inhabiting plains and mountains alike. A ground-haunting species, apt to take cover. Never flying high, and always easy to catch."—*E. N. B.*

#### NYPHALINÆ.

BYBLIA BOYDI, sp. n. (Nos. 16-22.) (Plate XXX. figs. 1 ♂, 2 ♀.)

*Hypanis cora* Feisth.; Butl. Proc. Zool. Soc. 1881, p. 177, pl. xviii. fig. 4.

Types (♂ and ♀) in Hope Museum, Oxford.

Seven specimens; 4 ♂, 3 ♀. Distinguishable from the "dry-season" form of *B. götzius* Herbst and *B. anvatara* Boisd. by the following particulars:—(1) The area of fulvous ground-colour lying between the black submarginal band and the oblique median black patch on the disc of the fore wing is in *B. boydi* divisible into two portions, separated by a pair of black denticulations which almost meet one another along the course of the first median branch. Of these two portions, *the posterior is conspicuously narrower than the anterior*, the narrowing being caused mainly by the encroachment outwards of the oblique median patch. The outline of this latter patch in the allied forms tends rather sharply inwards between the first median branch and the dorsal border, but in *B. boydi* it is continued to the dorsal border at such an angle as to preclude the fulvous area from expanding again posteriorly, as it does in normal *B. götzius*. (2) *A chain of small black spots* is more or less visible, crossing the fulvous median area of the hind-wing upperside. These spots, which correspond to a series constantly present in *B. ilithyia* Drury, are only rarely indicated in *B. götzius*. The above characters appear to be constant and distinctive. One or more of the following features may be found in specimens of *B. götzius* from various localities on the mainland, but they do not occur all together except in *B. boydi*, where the combination appears to be constant:—(1) The black costal bar of the fore wing is continued across the wing to meet the submarginal black band. (2) The fulvous submarginal spots of the hind-wing upperside are large,



subconical, and only slightly separated by the black-coloured veins. (3) All the black markings of the upperside are highly developed, especially the submarginal band of the hind wing, which encroaches considerably inwards. In the presence of the chain of small median dark spots and in the large size of the fulvous submarginal spots of the hind wing, *B. boydi* approaches *B. ilithyia*; in other respects it is much nearer *B. götzius*. The combination of characters above given renders the Socotran form easily recognizable among its allies, and seems to justify its separation as distinct. I have given it the name *boydi*, after the Principal of Hertford College, to whom Science in Oxford is under great obligations.

“Very common everywhere, hills and plains. Not conspicuously ground-haunting.”—*E. N. B.*

*Remarks on Geographical and Seasonal Forms in the Genus Byblia Hübn.*—*Byblia götzius* Herbst (= *Hypanis acheloia* Wallengr.; = *H. ilithyia* var. A, Trimen, S. Afr. Butt. vol. i. 1887, p. 264) is probably entitled to distinct specific rank beside *B. ilithyia* Drury<sup>1</sup>. Each form, as pointed out by Trimen (*loc. cit.* p. 266) and by Barker (Trans. Ent. Soc. Lond. 1896, p. 415), has its own range of seasonal variation. This is also shown by good series of both the *ilithyia* and the *götzius* (or *acheloia*) forms in the British Museum and in the Hope Collection at Oxford. For a large proportion of these each collection is indebted to Mr. G. A. K. Marshall, whose specimens all bear such ample data with regard to locality, altitude, and exact time of capture, as to throw much light upon questions of local and seasonal modification.

The geographical distribution of the two forms is interesting. The *ilithyia* form, with some local variation in size and in the relative proportions of dark markings to fulvous ground-colour, is found in India, Ceylon, Arabia, and the greater part of Wallace's “East African” subregion, including the West African coast districts lying northwards from the River Gambia and southwards from the Congo. It also extends for some distance into the South African subregion, occurring commonly in the Transvaal and Natal highlands, and coming, though rarely, down to the sea at Durban. Its distribution is therefore mainly Indian and “East African” in Wallace's sense<sup>2</sup>. The *götzius* form, on the other hand, is absent from India and from a large portion of “East Africa.” It is found at Sierra Leone, Cape Coast Castle, Lagos, Old Calabar, and the coast districts of the Gaboon and the Congo; but outside the limits of Wallace's West African subregion, *i. e.* in Senegal to the north and Angola to the south, it is replaced by typical *ilithyia*. Beginning again on the south-east coast, about the easternmost districts

<sup>1</sup> The evidence on which Mr. Marshall decides against their specific distinctness appears to me to require confirmation. See Marshall in *Ann. Mag. Nat. Hist.* 1896, xviii. p. 338.

<sup>2</sup> Wallace, ‘Geographical Distribution of Animals,’ 1876, vol. i. pp. 251, 258 and map.

of the Cape Colony<sup>1</sup>, it becomes very common at Durban, and follows the coast-line northwards, occurring at the mouths of the Zambesi, in Mozambique, and at Wasin. Though it seems to be rarely if ever met with in the "South African" interior, it passes inland up the Zambesi and is found in Matabeleland and at Zomba on the Shiré; while the British Museum also contains specimens from Nyasaland, Lake Mwéru, Tanganyika, the Victoria and Albert Nyanza, Wadelai, the Galla country, Abyssinia, Somaliland, and Aden. Like *B. ilithyia*, it shows some amount of local variation which may perhaps justify the specific separation of certain geographical forms<sup>2</sup>.

It appears therefore that, so far as is known, the distribution of the two species (or varietal groups) is fairly distinct, though their respective ranges coincide for a small portion of the South African subregion and to a larger extent in "East Africa," as at Wadelai, in Somaliland, and at Aden. It is further evident that while the distribution of the *ilithyia* form is continuous from India throughout the "East African" subregion, that of the *götzius* form is almost if not quite discontinuous, its area being separated into a western and an eastern division. In the light of these facts it is remarkable that the Socotran form is most closely akin, not to the *ilithyia*, but to the *götzius* type, nearly resembling in fact West African specimens of *B. götzius*, from which it is separated geographically by the whole width of Wallace's East African subregion. It is further of interest to note that the Madagascar and Comoro Islands form (*B. anvatara* Boisd.), though no doubt distinct, is also a modification, not of *B. ilithyia*, but of *B. götzius*<sup>3</sup>. *B. ilithyia*, being found at such distant points of the "East African" subregion as Senegal, Angola, and Somaliland, as well as in Arabia, India, and Ceylon, might well have been expected to be the form occurring in Socotra; and the fact that it is here replaced by a form of *B. götzius* suggests the possibility that this island, like the South African subregion, and Madagascar with the Mascarene group, contains relics of a more ancient African fauna that has been expelled or excluded from the bulk of the mainland by the great irruption of forms of life which is believed to have taken place from the north-east<sup>4</sup>.

<sup>1</sup> It is implied by Mr. Marshall (*loc. cit.* p. 337) that this Southern race of *B. götzius* (to which he restricts Wallengren's name *acheloia*) occurs also in the Western districts of South Africa, where, he states, the Cunene River (north of Damaraland) appears to be its northern boundary.

<sup>2</sup> Mr. Marshall (*loc. cit.* pp. 337, 338) recognizes three local races—the Southern (*acheloia* Wallgr., of which *vulgaris* Butl. is the wet-season form), the Western and Central African (*götzius* Herbst), and the North-eastern (*castanea* Butl.). Prof. Bayley Balfour's Socotran examples of *B. boydi*, noted by Butler as *Hypanis cora* Feisth., are rather curiously ranked by Mr. Marshall under var. *acheloia* Wallgr.

<sup>3</sup> Trimen, *South Afr. Butt.* vol. i. 1887, p. 267.

<sup>4</sup> Wallace, 'Geographical Distribution,' 1876, vol. i. p. 218, &c. Prof. Bayley Balfour (*Proc. Roy. Instit.* vol. x. 1884, p. 296) discusses the affinities of Socotran with West and South African plants, and observes that "Socotra indeed is, with Madagascar, to be regarded as the remains of a greatly advanced

The variations of the underside of the hind wing in both forms, *B. ilithyia* and *B. götzius*, have been well described by Trimen (*loc. cit.* pp. 265, 266). They are undoubtedly seasonal, as pointed out by Barker (*Trans. Ent. Soc. Lond.* 1895, p. 415), and by Marshall in the MS. notes and labels accompanying the series in the Hope Collection above referred to, as well as in the *Annals & Mag. Nat. Hist.* 1896, xviii. p. 333, &c. The deeply ferruginous hind wing, on which the three creamy bands stand out conspicuously, belongs in each case to the dry-season form, and there are several intermediate grades leading up to the dull ochreous yellow of the wet-season form. In addition to the points noted by Trimen, it may be remarked that in the wet-season form of *B. götzius* the black submarginal band of the hind wing is relatively broader, and the proximally adjacent strip of ochreous ground-colour narrower, than in the wet-season form of *B. ilithyia*. In the former, indeed, the band of ground-colour is often reduced to a mere chain of fulvous dots with dark edging, forming a proximal border to the dark submarginal band. The pairs of whitish internervular spots on the dark band are also much less regular and conspicuous than in *B. ilithyia*. In the dry-season forms the veins crossing the median creamy band are in *B. götzius* often traced out with the deep ferruginous tint of the ground-colour, which marking has the effect of dividing the median creamy band into spots; this is not seen in *B. ilithyia*. In *B. götzius* also the dark submarginal band seems never entirely to disappear, even in extreme dry-season forms, as it may do in *B. ilithyia*. It soon, however, loses the whitish internervular spots, which in the wet-season form are already less distinct than in *B. ilithyia*.

The Socotran *B. boydi* resembles most specimens of *B. götzius* from the West African subregion in having the dark costal bar of the fore wing continued rather heavily across the wing to join the submarginal band. This is also more or less the case with two females of *B. götzius* from Abyssinia and specimens of the same from Somaliland and Aden in the British Museum; but in examples from South and East Africa the connection between the costal and the submarginal dark bands is often slight or absent. On the other hand, in the submarginal series of spots of the fulvous ground-colour on the upperside of the hind wing, the Socotran form comes nearer to specimens of *B. götzius* from Somaliland, Aden, and the Galla country than to any I have seen from West

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African coast-line at a remote period." Messrs. Sclater and Hartlaub (*Proc. Zool. Soc.* 1881, p. 167) point out that *Drymæca hæsitata*, one of Prof. Balfour's Socotran birds described by them, is most closely allied to a form inhabiting Madagascar. Col. Godwin-Austen (*Proc. Zool. Soc.* 1881, p. 252) considers that the land-molluscan fauna of Socotra affords "strong evidence that the island was once directly connected with Madagascar to the south"; and adds that "it is not unreasonable to suppose that in Socotra, the Seychelles, Madagascar, and Rodriguez we have the remnants of a very ancient more advanced coast-line on this western side of the Indian Ocean."



Africa. The spots in question are in *B. boydi*, as in the British Museum specimens of *B. götzius* from the localities last named, larger, closer together, more conical, and less quadrate than in individuals from West or South Africa, though in dry-season forms from Natal and East Central Africa an approach is made to the Socotran condition. The dark submarginal band of the hind wing in *B. boydi* is broader than in most specimens of *B. götzius* from E. and S. Africa, whether "wet" or "dry" (the narrower band belonging generally to the "dry" form). It is much broader than in the specimens of *B. götzius* from Somaliland, Aden, and the Galla country above referred to, but not, perhaps, much broader on the average than in the female specimens from Abyssinia.

The present examples of *B. boydi*, like Prof. B. Balfour's pair, are all dry-season forms. In at least two of the seven (both males), as also in both Prof. Balfour's specimens, the whitish internervular spots on the dark submarginal band of the hind-wing underside have disappeared, and in one of these the patches of ground-colour immediately adjacent to the pale median band are obsolescent. The wet-season form of *B. boydi* is still unknown. To judge by the analogy of *B. götzius*, its upper surface must be still more heavily marked with black than that of the specimens collected by Prof. Balfour and Mr. Bennett.

PYRAMEIS CARDUI Linn. (Nos. 8, 9.)

2 ♀. This species was also observed by Prof. Balfour.

"Common everywhere. The three most abundant species, in order of frequency, were (1) *Calysime anynana*, (2) *Byblia boydi*, (3) *Pyrameis cardui*."—*E. N. B.*

JUNONIA CLELIA Cram. (Nos. 23–28.)

Six specimens; 2 ♂, 4 ♀: two of the latter in a battered condition. These do not differ in any definite manner from specimens from the mainland and the Comoro Islands<sup>1</sup>. They are "dry-season" forms, the colouring of the hind-wing underside being fairly uniform and the ocelli obsolescent. This species was not obtained by Prof. Balfour.

"Very common in the mountains."—*E. N. B.*

HYPOLIMNAS MISIPPUS Linn. (Nos. 29–32.)

4 ♀. These are of the ordinary form, showing no tendency towards var. *alcippoides* Butl. They have suffered much from the attacks of larvæ. Not obtained by Prof. Balfour.

"Fairly common; commoner than *L. chrysippus*. Chiefly in the hills. Flight strong."—*E. N. B.*

<sup>1</sup> In *J. epiclelia* Boisd., from Madagascar, the size of the creamy-white markings of the upperside is much reduced, but I doubt whether the other features mentioned by Trimen (*loc. cit.* p. 216) are constant points of difference from *J. clelia*.



## LYCÆNINÆ.

## TARUCUS THEOPHRASTUS Fabr. (No. 33.)

1 ♂. This species has a wide range throughout the Indian and Ethiopian regions and the Mediterranean subregion of the Palæarctic. It does not occur in Prof. Balfour's collection.

## ZIZERA LYSIMON Hübn. (Nos. 34-37.)

*Lycerna lysimon*, Trimen, South Afr. Butt. vol. ii. 1887, p. 45.

Four specimens; apparently 3 ♂ and 1 ♀. This species also was not obtained by Prof. Balfour.

"Found commonly everywhere, both hills and plains, but chiefly the former. Flight always close to the ground."—*E. N. B.*

A Lycænid collected by Riebeck, who visited Socotra soon after Prof. Balfour, was not determined<sup>1</sup>.

## PIERINÆ.

## BELENOIS ANOMALA Butl. (No. 38.)

*Synchlœ anomala* Butl. Proc. Zool. Soc. 1881, p. 178, pl. xviii. fig. 3.

One ♀. The specimen is broken, but less worn than the type, which is also a female. The large black spot at the end of the cell in the fore wing, subquadrate in the type, is here rather subtriangular, with the base directed inwards, and showing on both surfaces a slight proximal indentation. On the under surface the outer border of the fore wings is greyish shot with pink, not semitransparent as in the type.

Mr. Butler (*loc. cit.*) assigns this form to the genus *Synchlœ*, but adds that "the possession of a male specimen would satisfactorily decide whether or not it is an unusually aberrant *Beleinois*." The male is still unknown; the venation, however, is unmistakably that of *Beleinois*, as the 1st subcostal branch in the fore wing is concurrent with the costal (cf. *B. mesentina*, *B. creona*, *B. gidica*, &c.), while the upper discocellular is straight and forms an open angle with the lower. There can be little doubt that this interesting species comes nearest to *B. abyssinica* Luc., the dry-season form<sup>2</sup> of *B. gidica* from the African mainland.

"Rare; only met with in the Haghier Range, at an altitude of about 2300 ft. In the same place another white butterfly of corresponding size was seen, with circular black spots [perhaps the male]. Both flew fast."—*E. N. B.*

## TERACOLUS NIVEUS Butl. (Nos. 39-42.)

*Teracolus niveus* Butl. *loc. cit.* p. 177, pl. xviii. fig. 1.

*Teracolus candidus* Butl. *loc. cit.* p. 179, pl. xviii. fig. 2.

One ♂, three ♀. The male and one female correspond with

<sup>1</sup> Taschenberg, *Zeitschrift für Naturwiss.* Bd. lvi. 1883, p. 182.

<sup>2</sup> See Barker, *Trans. Ent. Soc. Lond.* 1895, p. 419.

Butler's *T. niveus*; another female is more heavily marked; the third female agrees with his *T. candidus*. In the male a few yellow and orange scales form a minute speck proximally, adjacent to the black dot at the end of the cell on the underside of the hind wing. A similar yellowish speck occurs in the females, but tends towards the costal rather than the proximal aspect of the dot.

Dr. Butler now considers his *T. niveus* to be the wet-season and *T. candidus* the dry-season form of the same species. In reference to the faunistic affinity between Socotra and the Mascarene group (*supra*, p. 377), it is of interest to note that *T. aldabrensis* Holl., from Aldabra, appears to be the nearest relative of the Socotran *T. niveus*<sup>1</sup>.

"The male was taken on Dec. 19th in the sandy coast-plain of Ghalansyah. It was rescued from the jaws of a lizard."—*E. N. B.*

CATOPSILIA FLORELLA Fabr. (Nos. 43–46.)

*Catopsilia pyrene* Swains.; Butl. Proc. Zool. Soc. 1881, p. 178.

Four specimens; 1 ♂, 3 ♀. The male and two of the females are much worn.

"Only seen in the plain of Tamarida. Flight strong."—*E. N. B.*

#### PAPILIONINÆ.

PAPILIO BENNETTI, sp. n. (Nos. 47, 48.) (Plate XXX. fig. 3.)

Type in Hope Museum, Oxford.

Two specimens, both probably ♂, but the abdomen of one is imperfect. These resemble *P. demoleus* Linn., from the African mainland, but may be distinguished by the following characters:— (1) On the upper surface all the yellow markings are much reduced in size, and the second spot from the dorsal border of the yellow median chain in the fore wing is more or less Z-shaped, instead of being irregularly rhombic as in *P. demoleus*. (2) There is a broad black area of almost uniform width between the median and the submarginal chains of yellow spots on the fore wing. The corresponding area in *P. demoleus* is comparatively narrow, and conspicuously denticulated in consequence of the relatively large size of the median yellow spots. (3) On the under surface the pale submarginal spots of the hind wing are quadrate, or even elongated in a direction at right angles to the border of the wing; whereas in *P. demoleus* they tend to be oblong, with the long diameter parallel to the hind border. The same applies to the series of rudimentary eye-like marks immediately proximal to the yellow submarginal row. Another feature which is probably distinctive is the fact that in the eye-like mark within the cell on underside of the hind wing the blue edging with its accompanying buff crescent extends only along the posterior side of the triangular black patch, instead of being continued along two sides, the posterior and the dorsal, as in *P. demoleus*. An approach to

<sup>1</sup> See Butler, Ann. & Mag. Nat. Hist. 1897, xx. p. 464.

this condition may occasionally be seen in the latter species. Many specimens of *P. demoleus* from Aden resemble *P. bennetti* in the narrowness of the pale median band of the hind wing; they differ, however, in the other particulars.

Mr. Bennett's specimens were taken on the extreme summit of Jebel Dryet (4900 ft.), settled on a Bedaween's bright-coloured cotton wrap or loin-cloth. The species is a strong flyer. It was not often met with, and never at a less elevation than 3500 ft. It does not occur in the collection made by Prof. Bayley Balfour.

#### HESPERIIDÆ.

RHOPALOCAMPTA JUCUNDA Butl. (Nos. 49-51.)

*Hesperia jucunda*, Butl. Proc. Zool. Soc. 1881, p. 179, pl. xviii. fig. 8.

Three specimens, all ♂. This species, as remarked by Trimen (South Afr. Butt. vol. iii. p. 373) is near *R. keithloa* Wallgr. from the East African mainland. It is also allied to *R. taranis* Hew. (*R. anchises* Gerst.), which has a wide African distribution and occurs at Aden (Butler, *loc. cit.* p. 179).

"Found in the hills, and also in the coast-plain between Ghalansyah and Tamarida."—*E. N. B.*

GEGENES NOSTRADAMUS Fabr. (No. 52.)

One specimen, a ♀. This species, which extends throughout the Mediterranean subregion into the North-western districts of India, was not obtained by Prof. Balfour. Specimens from Aden (var. *karsana* Moore) are more sandy in colour than the Socotran example.

The Heterocera collected by Mr. Bennett consist of 26 specimens, belonging to 16 species. These have been kindly named by Sir George F. Hampson. There are no new forms among them; *Oligostigma incommoda*, which was described by Dr. Butler (Proc. Zool. Soc. 1881, p. 180) from a specimen obtained by Prof. Balfour, does not occur in Mr. Bennett's collection. The Socotran Heterocera, so far as they are known, appear to present a mixture of African and Oriental species, the former predominating, together with some widely-distributed types such as *D. pulchella*. As in the case of the Rhopalocera, the African element does not seem to be exclusively East African. It is unfortunate that the Moths collected by Riebeck<sup>1</sup> were never determined.

#### COSSIDÆ.

AZYGOPHLEPS INCLUSA Wlk. (No. 53.)

One specimen. Another packed by Mr. Bennett was completely destroyed by beetle larvæ.

"In the hills."—*E. N. B.*

<sup>1</sup> Taschenberg, Zeitschr. f. Naturwiss. Bd. lvi. 1883, p. 182.

## ARCTIIDÆ.

DEIOPELA PULCHELLA Linn. (Nos. 54-57.)

"Ardahan, &c. Always on the grassy slopes of hills. Lived in the grass; never flew more than 2 feet from the ground."—*E. N. B.*

Four specimens. This species was also obtained by Prof. Balfour.

LITHOSIA VETUSTA Wlk. (No. 58.)

One specimen.

## NOCTUIDÆ.

AGROTIS DIVISA Wlk. (Nos. 59, 60.)

Two specimens, one much worn.

EUPLEXIA CONDUCTA Wlk. (No. 61.)

One specimen.

BANIANA INTORTA Swinh. (No. 62.)

One specimen.

CEROCALA VERMICULOSA H.-S. (Nos. 63-69.)

Seven specimens.

CALPE EMARGINATA Fabr. (No. 70.)

One specimen.

## GEOMETRIDÆ.

HYPERYTHRA LUCICOLOR Butl. (No. 71.)

One specimen.

BOARMIA ACACIARIA Boisd. (No. 72.)

One specimen.

CRASPEDIA DERASATA Wlk. (No. 73.)

One specimen.

CRASPEDIA LACTARIA Wlk. (No. 74.)

One specimen.

CRASPEDIA PULVEROSARIA Wlk. ? (No. 75.)

One specimen.

## PYRALIDÆ.

NEPHOPTERYX sp. (No. 76.)

One specimen, too much worn for recognition.

METASIA sp. (No. 77.)

One specimen.

## TORTRICIDÆ.

TERAS sp. (No. 78.)

One specimen.